

Eta Carinae: an observational testbed for 3-D interacting wind modeling

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Eta Car, with its very massive interacting winds, provides shocked arc-like structures dense enough to trace in forbidden emission lines out to 0.7" (1700 AU). As the massive binary is in a very elliptical orbit ($e \sim 0.9$), the spatial and velocity structures of these winds change over the 5.54 year period. We can track ionization structures by several forbidden emission lines. With the addition of radiative transfer on a time-step frame-by-frame basis, we are learning much new information on the ballistic structures, and may gain insight on how molecules and dust might form in these very massive systems.